

REMARKS

A Notice of Appeal was previously filed in this application on October 1, 2004. This appeal is being withdrawn in favor of the present request for continued examination.

The indicated allowability of claims 8-12 is gratefully acknowledged.

In the present amendment, the claims have been amended in order to clarify the subject matter that is being claimed and to more clearly distinguish the references of record.

The present invention is a non-return valve that is generally used for the purpose of relieving pressure in an enclosure when the pressure reaches a predetermined level. A valve of this nature is sometimes called a pressure relief valve. An important feature of a pressure relief valve is that it relieves pressure at a particular, desired, pressure level. In some applications, it is necessary that this pressure be quite precisely determined. The simplicity and adjustability of the present invention makes it possible to finely tune this valve in order to relieve pressure at just the right pressure level. The valve itself is relatively simple in construction, and yet it has very desirable and accurate adjustment capabilities. These features are believed to distinguish all of the references of record in this case.

As stated in the application, for example at page 4, lines 18-21, the non-return valve of the present invention "is intended to cause the fluid pressure that prevails in a space enclosed by walls...not to rise above a predetermined value." The present invention valve relieves pressure in the enclosure when the pressure in the chamber reaches a predetermined "blow-off pressure" the valve relieves pressure in the enclosure. Such a valve is not intended to serve generally as a one way valve that permits fluid to flow freely and regularly only. While it has this effect, the valve construction is somewhat different from a valve wherein generally continuous flow is permitted in one direction but not in the opposite direction.

This is one aspect of the invention that distinguishes the present invention from the cited Toennesen reference. The stated objectives of the Toennesen patent are to provide a high speed one way valve that reduces the problems of inertia and slow response in previous valves (see col. 1, lines 6-14). The Toennesen reference therefore employs a special valve member construction that is completely different from the present invention. The valve member 35 of Toennesen is generally annular and tapers at the ends to "highly flexible ends 37 and 38" (col. 2, lines 20 and 21). It seems to be a critical feature of this patent that the valve member has thin edges that lie flat against tapered valve seats. The inventor thus states:

"The cross section shape of the annular member 35 especially a shape with thin extremities provides a very low mass and consequently low inertia of the two arms of the general V-shape cross section of the valve members so that there is fast response and yet a single moving part thus providing an action which is very delicate."

The purpose of this valve appears to be to permit fluid flow in a first direction with a slight fluid pressure differential, while still providing good resistance to reverse fluid flow. The valve seats are generally cone shaped and bear against the open ends of the annular valve members to deform them into an arcuate shape where the thin edges of the valve members lie flat against the inclined surfaces of the valve seats. While adjustment of the valve seats would seem to have the effect of increasing the valve opening pressure in a forward direction, the feature is not discussed and the whole purpose of the Toennesen invention seems to be the use of the special annular valve member with thin, highly sensitive edges, so that the valve will be highly responsive and will open and close quickly. Since one of the main features of the Toennesen invention is the use of an annular valve member having thin edges, it would be directly contrary to the teaching of that patent to substitute a round, solid O-ring instead of the inventive feature.

For the foregoing reasons, it is again urged that the use of an O-ring in an adjustable valve is not shown or suggested in Toennesen. The cited Chorkey reference does not supply this deficiency. While Chorkey does disclose an O-ring 26 in FIG. 4, a T-shaped ring 42 in FIG. 10, and a V-shaped ring 44 in FIG. 11, the Chorkey check valve is not adjustable and does not employ a delicate valve member of the type employed in Toennesen. The Toennesen ring could not be used in Chorkey, and there is no suggestion that they be tried. Nor could the rings or O-rings of Chorkey be used in Toennesen, and there is no suggestion that it be tried. It is submitted that Toennesen would consider all of the sealing rings of Chorkey to be insufficiently delicate and responsive for the Toennesen invention.

Considering the claims of the present invention in more detail, claim 1, as currently amended, specifies that an O-ring valve element is mounted on a groove for a fluid outlet in a valve member. This valve construction is not disclosed in Toennesen. In addition, claim 1, as amended, further specifies the setting mechanism for steplessly setting the circumferential edges and specifically recites that the setting mechanism includes a locking mechanism for locking the circumferential edges at a desired axial setting. This is a significant feature of the present invention and is not present in Toennesen. A very substantial difference in the blow-off pressure can be produced by as little as a 15 degree rotation of the movable flange. It can be very desirable to be able to lock the flange in a fixed position when the proper adjustment has been achieved. None of the references of record in this case disclose any locking features. The present invention employs a locking mechanism and specifically a lock nut to prevent inadvertent alteration in the settings. The present invention can be subjected to a substantial amount of vibration and the settings could become altered without the important adjustment feature. Claims 1 and 2, as amended, recite this locking feature and are believed to be in

condition for allowance for that reason alone, in addition to the other distinguishing features discussed above. For this reason, it is urged that claims 1 and 2 are presently in condition for allowance, and such action is respectfully solicited.

New claims 13-20 recite the present invention in somewhat different language and are believed to overcome the grounds of rejection previously set forth by the examiner. These claims do not introduce new matter and are believed to be in condition for allowance. Claim 13, the only independent claim in this group of claims, specifies the novel construction of the present invention, employing an O-ring seal in a groove formed over a cylindrical portion outlet positioned inward of a closed end of the valve member. This construction is not shown in any of the references of record.

In addition to claim 13, dependent claims 14-20 cite a number of other features of the invention that are not shown in any of the references of record. For example, claim 15 specifies the right angle edges on the groove that provide desirable sealing contact with the round surface on the O-ring. Claim 16 specifies that the O-ring rides on the outside of the groove so that the O-ring is urged outwardly as the groove is narrowed. Claim 17 covers the important locking feature of the present invention that prevents the valve from coming out of adjustment. The locking mechanism is also covered in claim 18 in more detail. The specific construction of the movable flange is specified in claim 19, wherein the flange is threaded on an inner side of the groove, and threads on the outer side of the flange engage a threaded opening in the enclosure in order to mount the valve in an enclosure. The generally circular shape of the O-ring seal is specified in claim 20. In this regard, it should be noted that an O-ring seal is generally round in cross section. The reference to other shapes in the specification merely was intended to cover

analogous shapes that are still O-rings but may not be precisely circular in cross section, such as a somewhat oval shape.

In view of the foregoing amendments and comments, it is urged that all of the claims in the present application are in condition for allowance, and such action is respectfully solicited.

Please charge any costs associated with this amendment to Deposit Account No. 22-0257.

The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service as first class mail with postage prepaid in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this first day of April, 2005.

Respectfully submitted,

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